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CONTROL BLOCK:

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 (1)

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

[0] [1] | G | A | E | I | N | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 5

LICENSEE CODE LICENSE NUMBER LICENSE TYPE OR OF CARS

C.

REPORT SOURCE: L 6 0 5 0 10 0 3 2 1 7 0 9 0 7 7 9 8 0 9 1 8 7 9
DOCKET NUMBER: 60 61
EVENT DATE: 62
REPORT DATE: 63

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES

012 | With the Unit 1 reactor critical at 2304 megawatts thermal power, it was discovered

013 | that the RHR service water pumps "A", "C" and "D" would not pump rated flow at rated

014 | discharge pressure as per HNP-1-3167, "RHR Service Water Pump Operability and Rated

015 | Flow" test. Later, the "B" pump was also diagnosed to have the same problem. Since

016 | the RHR service water system could not be proven operable, the reactor was taken to

017 | cold shutdown as per the Tech Specs section 3.5.C. The other emergency core cooling

018 | systems were available and operable. The pumps' failure to pass the (continued)

7 8 9 COMP VALVE 80

SYSTEM CODE C I F		CAUSE CODE D		CAUSE SUBCODE Z		COMPONENT CODE P U M P X X				COMP. SUBCODE G		VALVE SUBCODE Z	
EVENT YEAR 7 9				SEQUENTIAL REPORT NO. 0 7 5		OCCURRENCE CODE 0 1		REPORT TYPE T				REVISION NO. 0	
ACTION TAKEN L G		FUTURE ACTION X		EFFECT ON PLANT A		SHUTDOWN METHOD A		HOURS 0 0 4 5		ATTACHMENT SUBMITTED Y		NPRD-4 FORM SUB. N	
PRIME COMP. SUPPLIER N		COMPONENT MANUFACTURER J 1 1 0 1 5											

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS	
110	The RHR service water pump operability test contained formulas for calculating Inlet
111	Pressure and the discharge pressure which were determined to be incorrect. The archi-
112	tect engineer was consulted about the equations, their suggestions were then implem-
113	ented in a revision to HNP-1-3167 and a Document Change to the Tech Specs limit on
114	Pump Total Dynamic Head was submitted to and approved by NRR. (continued)

7 8 9
FACILITY STATUS 10 POWER 11 OTHER STATUS 12
1 5 1 28 0 9 5 3 NA 1 44
7 8 9 10 11 12 13 14
ACTIVITY CONTENT 15
RELEASED OF RELEASE 16 AMOUNT OF ACTIVITY 17
1 6 1 23 1 24 NA 1 45
7 8 9 10 11 12 13 14
PERSONNEL EXPOSURE NUMBER 15 TYPE 16 DESCRIPTION 17
1 7 0 0 0 37 1 25 NA 1 46
7 8 9 10 11 12 13 14
PERSONNEL INJURIES NUMBER 15 DESCRIPTION 17
1 8 0 0 0 38 1 26 NA 1 47
7 8 9 10 11 12 13 14
LOSS OF OR DAMAGE TO FACILITY TYPE 15 DESCRIPTION 17
1 9 1 42 NA 1 48
7 8 9 10 11 12 13 14
PUBLICITY ISSUED DESCRIPTION 15
2 0 1 43 NA 1 49
7 8 9 10 11 12 13 14
METHOD OF DISCOVERY 15 DISCOVERY DESCRIPTION 17
1 31 1 32 Surveillance Testing 1 49
7 8 9 10 11 12 13 14
LOCATION OF RELEASE 15
NA 1 50
7 8 9 10 11 12 13 14
POOR ORIGINAL
7910010425
NRC USE ONLY
1060 009 1 51
7 8 9 10 11 12 13 14

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Event Description and Probable Consequences (continued)

operability test is a repetitive occurrence for the RHR service water pumps; reference License Event Report No. 50-321/1979-063.

Cause Description and Corrective Actions (continued)

The pumps were then successfully retested. The Unit 1 & 2 plant service water, RHR service water and standby plant service water pump procedures were all reviewed and found to contain the same formulas as mentioned before.

All the procedures were revised prior to Unit startups. A further review of the procedure formulas revealed that the original "Delta P" formula was correct, only the required RHR service water pump Total Dynamic Head in feet needed to be changed.

SUPPLEMENT TO LER 50-321/1979-075

On September 7, 1979, with the reactor critical at 2304 megawatts, while performing the RHR service water pump operability procedure (HNP-1-3167), RHR service water pumps E11-C001A, C, and D would not pump rated flow (4000 GPM) at rated pressure as required by HNP-1-3167 and Tech. Spec. section 4.5.C.1.b. The 1E11-C001A pump had a flow of 4024 GPM at 355 PSIG; the 1E11-C001C pump had a flow of 4024 GPM at 375 PSIG, and the 1E11-C001D pump had a flow of 4024 GPM at 373 PSIG.

After the discharge pressure gages (1E11-R004A-D) were recalibrated, it was determined that 1E11-C001B had also failed to meet the flow and pressure requirements; the pump had a flow of 4156 GPM at 405 PSIG. At this time the reactor was brought to cold shutdown as per Tech. Spec. section 3.5.C.

Due to the inherent problem of the pumps failing to pump rated flow at rated pressure when the river water level is low, engineering services was consulted to review the pump pressure formulas in HNP-1-3167. The initial review indicated that the formulas for inlet pressure, discharge pressure, and differential pressure were incorrect. The Architect Engineers submitted new formulas which were incorporated into the Unit 1 and 2 operability procedures for RHR service water plant service water, and the standby plant service water pumps.

On 9-9-79, the Unit 1 RHR service water pumps were retested using the new formulas plus the corrected "Total Dynamic Head" for the pumps granted by the Tech Specs change. All the pumps passed their operability test so new reference data was taken and the Unit started up.

A later review of the new formulas revealed that the original differential pressure formula was correct. Thus, the original "Delta P" formulas were reinserted into their respective operability procedures.

As far as the RHR service water procedure is concerned the valves derived from the new "Delta P" formula are very close (within a few PSI) and in a conservative direction to those valves derived from the old "Delta P" formula with the new total dynamic head valve. The reason the old formula was reinserted is because the new formula did not take into account the Hydraulic Institute Standards for the pumps.

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